

ABSTRACT OF THE DISCLOSURE

The present invention provides methods for identifying new compositions having one or more desired activities, and methods for identifying organisms that are sensitive or resistant to a drug composition. The methods are based upon genetic response profiles generated for an initial set of compositions, where at least one member of the set of compositions has been shown to have at least a first demonstrated activity and a second desired activity. By examining the patterns of genetic and cellular responses (i.e., the genetic response profiles) evoked by a first set of "known" compositions having varying degrees of one or both activities, a preferred pattern of genetic responses can be formulated which corresponds to the desired activity, but not to the demonstrated activity. Additional sets of compounds or compositions can then be screened for the desired genetic response profile, thereby identifying new compositions having the desired activity. Furthermore, populations of organisms can be screened for sensitivity or resistance to drug compositions, based upon comparison of genetic response profiles to the preferred pattern.